mass of bare rock, the summit of which is entirely devoid of vegetation, and quite inaccessible. The cliffs are composed of columnar basalt. At the eastern end of the island are some sand rocks, like that of Bermuda, and dunes of calcareous sand also occur. St. Michael's Mount is a cone 300 feet high, composed of a mass of phonolith. The remaining islands are flat, composed of sandstone, with volcanic particles.

It was in the dry season, which extends from July to December, that the *Challenger* visited these islands; this season, however, is not one of absolute drought, parching up everything, but there are occasional heavy rains. Trees abound on the higher parts of the island, where the land has not been cleared for cultivation, or where the convicts have not felled them for making their fishing-boats or rafts, the largest trees, it is said, having all disappeared for this purpose. Numerous creepers cluster together in the branches of the trees. At the western extremity of the island the vegetation is thickest and richest, and apparently of a virgin character. *Jatropha gossypifolia* L., a large shrubby plant, common in the West Indies, and also growing in Bahia, Mexico, and New Granada, was very abundant; it was in full flower, but its only foliage were tufts of young leaves just beneath the inflorescence, so that its bare stems were conspicuous among the green creepers. The plant was also found on St. Michael's Mount and Rat Island. Another euphorbiaceous-looking plant, with stout thorns, was found on the principal island, but not on any of the others. A thorny acacia also grew on the shore; and climbing round almost every tree was *Abrus precatorius* L., one of the commonest of tropical plants, and so well known for its pretty brilliant scarlet and black seeds, which are used everywhere for necklaces, and other ornamental purposes, and in India as a standard weight. This plant, however, grew only on the main island. *Ipomœa pes-capræ* Sw. is abundant on the sand hills, and upon it and most of the other low-growing plants, *Cuscuta americana* L., spreads amazingly. A species of *Cereus* was abundant on the cliffs, but only one grass (*Oplismenus colonus* H.B.) was found on the main island.

Trees, bushes, and creepers cover the upper part of St. Michael's Mount, which is, to a certain extent, inaccessible, and, moreover, being so small, offers no room for cultivation; therefore there is no reason to suspect that the plants found upon it are attributable to any other than a natural origin. *Capparis cynophallophora* L. grows in abundance on the summit of the mount. It is a tree with a stem 8 or 9 inches in diameter, and dark green oval lanceolate leaves. A species of Ficus with aerial roots grows in favourable spots, and there forms a tree of considerable size; one is mentioned as having a trunk 30 feet high, and 18 inches in diameter. On Rat Island the same species of Ficus was also found down near the sea level, where, instead of forming a tree, it becomes a low spreading bush, not more than 5 or 6 feet high. From the natural exposure of this island to the full force of the wind, all the plants growing here, which are mostly leguminous and euphorbiaceous, mingled with cucurbitaceous creepers, are stunted in their growth. Although shady moist places occur about St. Michael's Mount, neither on this nor on the main island were any ferns, mosses, or hepaticæ found. Lichens also are very scarce.

Among the principal cultivated fruits are bananas and melons, the latter being very plentiful, and of a peculiarly fine flavour. Grapes grow well, but are not cultivated at the present time. Sugar-cane, cassava, maize, sweet potatoes, &c. are also grown in large quantities.

Animal life is singularly scarce, two lizards being the only animals recorded from Fernando Noronha, one of which is peculiar to the island, the other being found also in North America.

NOTES

THE following intelligence with regard to the late Dr. Livingstone, sent by Dr. Kirk, appears in the *Times* of Tuesday:—"Lieut. Murphy, in a note addressed to me from M'pwapwa, a place about ten days' journey from the coast, and dated the 20th of January last, says that he was then accompanying the body, and expected to reach Bagamoio, a seaport, on or about the 14th ult. Capt. Sheffe, of the Austrian ship-of-war *Heligoland*, had proceeded to the coast, and would at once convey the body and Lieut. Murphy's party to Zanzibar on their arrival. Lieut. Cameron had set out for Ujiji to recover papers left there by Dr. Livingstone. Lieut. Murphy had been in communication with him subsequent to the death of Dr. Dillon, and was sorry to find that great difficulties impeded his onward progress, owing to the antagonism of native chiefs and the desertion of many of his followers on the road from Unyanyembe to Ujiji. Chuma, who for eight years accompanied the Doctor in his wanderings, I learn had been into Zanzibar. He seems to place the position of Dr. Livingstone's death at the north of Lake Bangweolo, on or about the 4th of May, 1873. He was probably on his way westward. A reply to the official telegram, regarding the disposal of the body on arrival, was anxiously expected."

WE learn that Mrs. Arnott, the widow of the late Dr. Neil Arnott, has written to Dr. Lyon Playfair, the member for the University of Edinburgh, offering 1,000*l.* for the promotion of Natural Philosophy in that University.

THE trustees of the late Dr. Andrew Bell, the founder of the Madras School, St. Andrews, have placed at the disposal of the Senatus of the University of St. Andrews, his native city, a considerable sum towards the endowment of an Education Chair during the present session. The Senatus has had under consideration the subject of a teacher's degree, and a programme relating to its institution has been laid before the Education Department of the Government.

AT a meeting of the Sedgwick Memorial Committee held at Cambridge on the 11th inst., Prof. Humphry in the chair, it was stated by the Treasurer that the subscriptions exceeded 10,000*l.*, and that more than 7,000*l.* had been paid into the account of the fund at the several banks. The question of the site of the new Geological Museum, which is to constitute the memorial, was discussed, and the feeling of the committee was in favour of the space in front of the New Museum and Pembroke Street.

THE Italian Government has determined to send out four expeditions for the observation of the Transit of Venus, the main instrument of inquiry depended upon being the spectroscope. On the other hand, for reasons not far to seek, no spectroscopes are to be employed by the English parties. Truly "they manage these things better in France," and not only in France, but in America and Italy.

TO-NIGHT (Thursday) Mr. Dewar's lecture On Dissociation will be given before the Chemical Society.

AT the annual meeting of the trustees of the Museum of Comparative Zoology, Cambridge, U.S., held in January, a committee reported that to carry out the plan inaugurated by Prof. Agassiz, a considerably larger endowment will be necessary, and that the funds now on hand are not sufficient to conduct operations on the present scale later than April 1, after which, unless an additional income of 15,000 dols. can be secured, it will be necessary to greatly reduce the scale of work. 30,000 dols. per annum is estimated as being the least sum on which the establishment can be maintained on a satisfactory scale. Efforts are now being made to secure an endowment of 300,000 dols., of which about 65,000 had been contributed at a recent date.

THE Duke and Duchess of Edinburgh, on their visit to the Zoological Gardens on Sunday last, desired to have their attention specially directed to a deer sent from Manilla by his Royal Highness as a present. When it arrived in this country, in May 1870, Mr. Sclater, F.R.S., the Secretary to the Society, immediately recognised that it belonged to a species hitherto quite unknown, and he accordingly named it *Cervus alfredi* or Prince Alfred's Deer. It is a very interesting fact that this specimen, and one of the opposite sex subsequently purchased by the Zoological Society, together with a young one born in the Gardens, are the only examples that have at any time been obtained of this particularly well-marked species of deer.

THERE will be an election at Worcester College, Oxford, in June, to three Scholarships, one of which will be in Natural Science. Particulars can be had on application to the senior tutor. At the same time there will be an election at Magdalen College to not less than four Demyships and one Exhibition. Of the Demyships, one at least will be Mathematical, and one at least in Natural Science; the Exhibition will be in Mathematics. The stipend of the Demyships is 95*l.* per annum, and of the Exhibition 75*l.*, tenable for five years. For particulars apply to the senior tutor.

THE Board of Trade have been informed by the Meteorological Committee that they are now prepared to re-introduce the use of Admiral Fitzroy's signals (cones and drum) with slightly modified significations, and that the change will take effect on and after March 15, 1874. The signals to be used will consist of:—1°. Cone, point downwards for southerly gales: S.E. round by S. to N.W. 2°. Cone, point upwards for northerly gales: N.W. round by N. to S.E. 3°. Drum *with cone*, to indicate the probable approach of a *very heavy gale* from the direction indicated by the cone. The drum will not be used without the cone. The signals are to be kept hoisted *during the daylight only*, until 48 hours have elapsed from the time *the telegram was despatched*, unless countermanded. At night lanterns may be used wherever the local authorities deem it advisable to do so, as pointed out in an explanatory pamphlet, copies of which are supplied for gratuitous distribution. It will be seen from the pamphlet in question, that the meaning of the signals is that an atmospherical disturbance exists (which will be explained in the telegram) and will probably, but not *necessarily*, cause a gale at the place warned *from the direction* indicated by the signal. The Meteorological Office will supply the canvas shapes and lanterns to such places as require them, on loan; but in all cases the local authorities must undertake the charges incidental to the hoisting of the signal, such as flagstaff and gear, oil, &c., and also to the keeping of the apparatus in repair, painting, &c.

M. G. TISSANDIER, the editor of *La Nature*, is completing a series of observations for calculating the amount of atmospheric dust falling each day. The mean found is said to be several pounds in twelve hours for a surface not larger than the Champ de Mars, rather less than a half a square mile.

THIRTY-SEVEN small planets have been discovered in the years 1872 and 1873, or 18½ for each year, making 1,850 per century. From the days of Hipparchus to the present time we may reckon 2,000 years; had astronomers worked with the same zeal and success during these 2,000 years, the number of small planets known would have amounted to 37,000, only three times the number given by Arago of stars up to the 7th magnitude, and a very small proportion of the stars of the 10th magnitude. Although very minute, the latter are generally much brighter than small planets as seen at the time of opposition.

PROF. O. C. MARSH has made out some interesting points in connection with the remains of equine forms in the North American tertiaries. Following up the genealogy of the horse, as traced by Prof. Huxley in the European remains, he has been able to show that the American deposits present even a more complete series of intermediate forms. Between *Orohippus agilis* of the Eocene, which was about the size of a fox, and had four toes on the fore foot, with three behind, and *Equus fraternus* of the Pleistocene, which is not osteologically distinguishable from the existing *Equus caballus*, the following genera form the connecting links in form, size, and antiquity, viz. *Miohippus* and *Anchitherium* of the Miocene, and *Anchippus*, *Hipparion*, *Protohippus* and *Pliohippus* of the Pliocene. "Considering the remarkable development of the group through the entire Tertiary period, and its existence even later, it seems very strange that none of the species should have survived, and that we are indebted for our present horse to the old world."

IN continuation of his exquisite researches on the phenomenon of flight (*Comptes Rendus*, January 12, 1874), M. Marey has made a series of observations which prove how important a part the onward movement of a bird plays in increasing the efficiency of each wing stroke. For supposing that in its descent the wing did not continually come in contact with a fresh volume of air, it would act at a disadvantage, because the downward impulse which, at the commencement of each stroke, it gives to the air below it, would make that air so much less efficient a resisting medium; whilst, by continually coming in contact with a fresh body of air, the wing is always acting on it to the best advantage. For this reason, when a bird commences its flight, it turns towards the wind if possible, to make up for its lack of motion on starting.

THE extension of the Cinchona cultivation in Darjeeling continues. Every year additional land is brought under Cinchona culture, and it is calculated that 2,000 acres more will be cleared and planted within the next four years. With regard to Ipecacuanha, upwards of 20,000 plants and cuttings are now in hand, all of which promise well. Another interesting fact relating to the introduction of useful plants into India, is that of the success in the Terai of the Cacao (*Theobroma cacao* L.). The plants that were planted out about a year ago, were sent from Kew at the suggestion of Dr. Hooker, and they are now in a most healthy and satisfactory condition.

THE French Academy has at last published the list of candidates for the seat rendered vacant by the death of the late Dr. Nelaton. The issue is quite uncertain. M. Broca, the celebrated anatomist, has obtained only a second rank, and M. Marey is placed in the third.

FATHER SECCHI is preparing, at Gauthier Villars, a second edition of his work on the Sun, on an enlarged scale. He has quoted so largely from Mr. Lockyer's "Solar Physics" that an intended translation of this work is abandoned for the present.

QUITE a sensation was produced in the last sitting of the Academie des Sciences, by the exhibition of photographs of Spitzbergen scenery, sent by Prof. Nordenskiöld. One of these represented a meteorite nearly 18 tons in weight.

A BELGIAN paper describes an immense petrified trunk of a conifer discovered in the province of Lineburg in perfect preservation. Its length is about 33 feet, and its diameter about 20 inches.

THE *Annuaire* of the Bureau des longitudes for 1874 has been recently published. Although sold at 1½ fr., it contains chromolithographs showing solar protuberances, and an essay by M. Faye on questions relating to the sun.

The widow of General Poncelet, one of the most distinguished French military engineers, has written to the French Institute, announcing that the whole of the works of her late husband will soon be in the hands of the public. The last volume, the sixth of the series, containing the lectures delivered at the Metz School of Artillery and the École Polytechnique, will be issued shortly. It is edited by M. Krœtz, Chief Engineer of the National Manufactures, one of the General's pupils. General Poncelet was a member of the French Institute for more than twenty years. He died in 1864.

A memoir upon the embryology of *Terebratulina*, by Prof. Morse, has just been published by the Boston (U.S.) Society of Natural History, this being the result of a thorough investigation in regard to the development of this genus of the brachiopod shells found so abundantly on the coast of Maine. Prof. Morse's labours were mainly prosecuted at Eastport, and extended through a period of several years. He found that the species spawns throughout the entire summer season (at least from April to August), but that investigations in the earlier part of the season were preferable, since, with the increasing warmth, the development is more rapid than is convenient to the observer.

The "Fenland Meteorological Circular and Weather Report" is the name of a monthly periodical, two numbers of which, for February and March, have just reached us. It is edited by Mr. S. H. Miller, F.R.A.S. The circular is intended to be "a medium for local meteorologists, an abiding record of the climate of the Fenland, and a register of the changes of the weather, to which the agriculturist, horticulturist, and naturalist may easily refer." It is intended besides, we believe, that the "Circular" should fill to some extent an educational function, and induce agriculturists to take an interest in the sciences with which their art is so intimately connected. This purpose is to be served by the publication of readable articles on scientific subjects, the first of which is by Mr. S. B. J. Skertchly, F.G.S., on the "Practical Bearings of Meteorology." The two numbers sent us contain well-constructed tabular and graphic reports of the meteorology of Wisbech for January and February, besides district reports, and a number of notes and short articles on subjects more or less intimately connected with the department to which the "Circular" belongs; the paper and typography are all that can be desired, and the price is only 2*d.* per month. The enterprise is highly creditable to its originators, and we sincerely hope it will be a great success and attain a wide circulation in the important district for whose benefit it has been started; and we hope the example thus set will be followed by other districts in the kingdom. The publishers of the "Circular" are Leach and Son, Wisbech.

A bill has been introduced into the U.S. Congress proposing an appropriation of 7,000 dols. to enable the Department of Agriculture to make a collection of all the species of trees growing throughout the United States, and for their exhibition in suitable cases. The collection itself, when completed, is to be exhibited at the Philadelphia Centennial Exposition, but to belong to the Agricultural Department, and to be returned to it.

At the meeting of the French Academy of March 2, M. Charles Sainte-Claire Deville, gave an account of his meteorological mission to Biskra and Tuggurt. At each of these stations an observatory has been established similar to that at Montsouris. Captain Roget superintends the observatory of Biskra, and Dr. Audet that of Tuggurt; the latter, according to M. Deville, is in an almost perfect situation, surrounded by a sufficient quantity of vegetation, and preserved from the effects of radiation. The results comprehend already observations continued during the month of January, and M. Deville sees in them the promise of important discoveries.

We have received a useful work lately published by the Smithsonian Institution, prepared by Prof. F. W. Clark, of Howard University, Washington. This is the first part of a series entitled the "Constants of Nature," and gives in tabular form the specific gravities, the boiling and melting points, and the chemical formulæ of a large number of substances, with indications of the authorities whence the facts are derived. The volume contains about 250 pages, and is well provided with the necessary indices.

Lieutenant G. M. Wheeler (United States Engineers) and party are in Washington, and are engaged in elaborating the results of their explorations in 1873. Already about 76,000 square miles of territory have been carefully gone over and topographed with a view to their representation in the new series of index maps now nearly ready for publication. Much valuable information in regard to the geology of the country, its mining facilities, and the probabilities of successful irrigation, has been obtained, and will be duly published. In the line of natural history the collections have been very large, embracing at least 1,200 skins of birds, besides many hundreds of reptiles, fish, insects, &c. The botanical collection is said to be the finest and largest ever procured by a Government expedition. The results of the work of the expedition for the years 1871, 1872, and 1873 are, we understand, shortly to be published, comprising seven large quarto volumes, which will prove a valuable addition to the scientific history of the great West.

We are glad to see, from Part IV. of the Transactions of the Clifton College Scientific Society, that that Society is exceedingly prosperous, so far as number and attendance of members is concerned, though we very much regret to learn that, like not a few other similar Societies, it contains but a small number of real workers. We hope that the patrons and office-bearers of the Society will do their best to devise some means to remedy this very serious defect, for serious the defect is, seeing that one of the main objects of such a Society is to train its members to methodical work, careful observation, and independent thinking. The only paper in this part, by a student member of the Society, is a long and elaborate one on Potteries, by C. C. Stevenson.

A thick supplementary number of Petermann's *Mittheilungen* has been published containing a vast number of statistics relating to the population of the globe, with two excellent illustrative maps.

At the meeting of the Adelaide Philosophical Society held on Nov. 25, 1873, Dr. Schomburgk read the second part of a long paper on poisonous plants. The plants noticed were those of the genus *Strychnos nux vomica, Datura stramonium* (the thorn-apple), *Solanum nigrum,* and *Taxus baccata* (the yew tree).

We learn, from a Reuter's telegram, that the bank, sixty miles in length, formed for a long time past in the White Nile south of the province of Secionda, and mentioned by Sir Samuel Baker as an obstacle to navigation, has been partially removed by the works ordered by the Soudan Government. The river is now navigable up to Kondokaro over a distance of ten and a half degrees. The works for the complete removal of the bank continue.

The additions to the Zoological Society's Gardens during the past week include a Finsch's Amazon (*Chrysotis finschi*) from W. Mexico, presented by Mr. C. Chivers; a Virginian Deer (*Cervus virginianus*) from N. America, presented by Mr. N. M. Bateson; a Cornish Chough (*Fregilus graculus*), British, presented by Mr. J. T. Hewes; a Common Otter (*Lutra vulgaris*), British, presented by Dr. Stafford; a Blue and Yellow Macaw (*Ara ararauna*) from S. America, presented by Miss J. Staines.